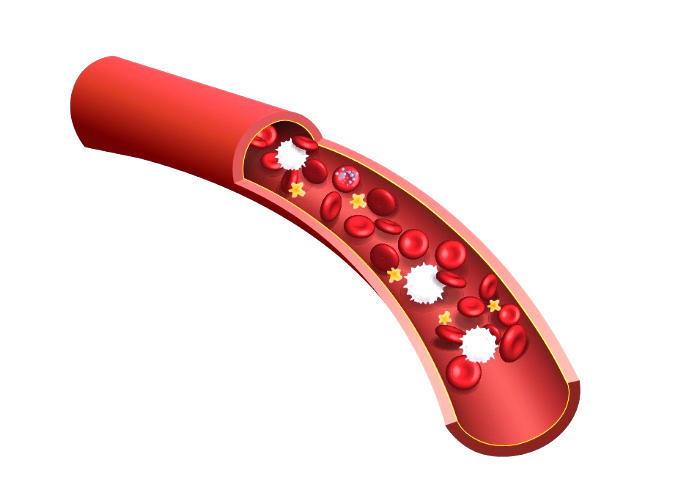
Blood Cytology

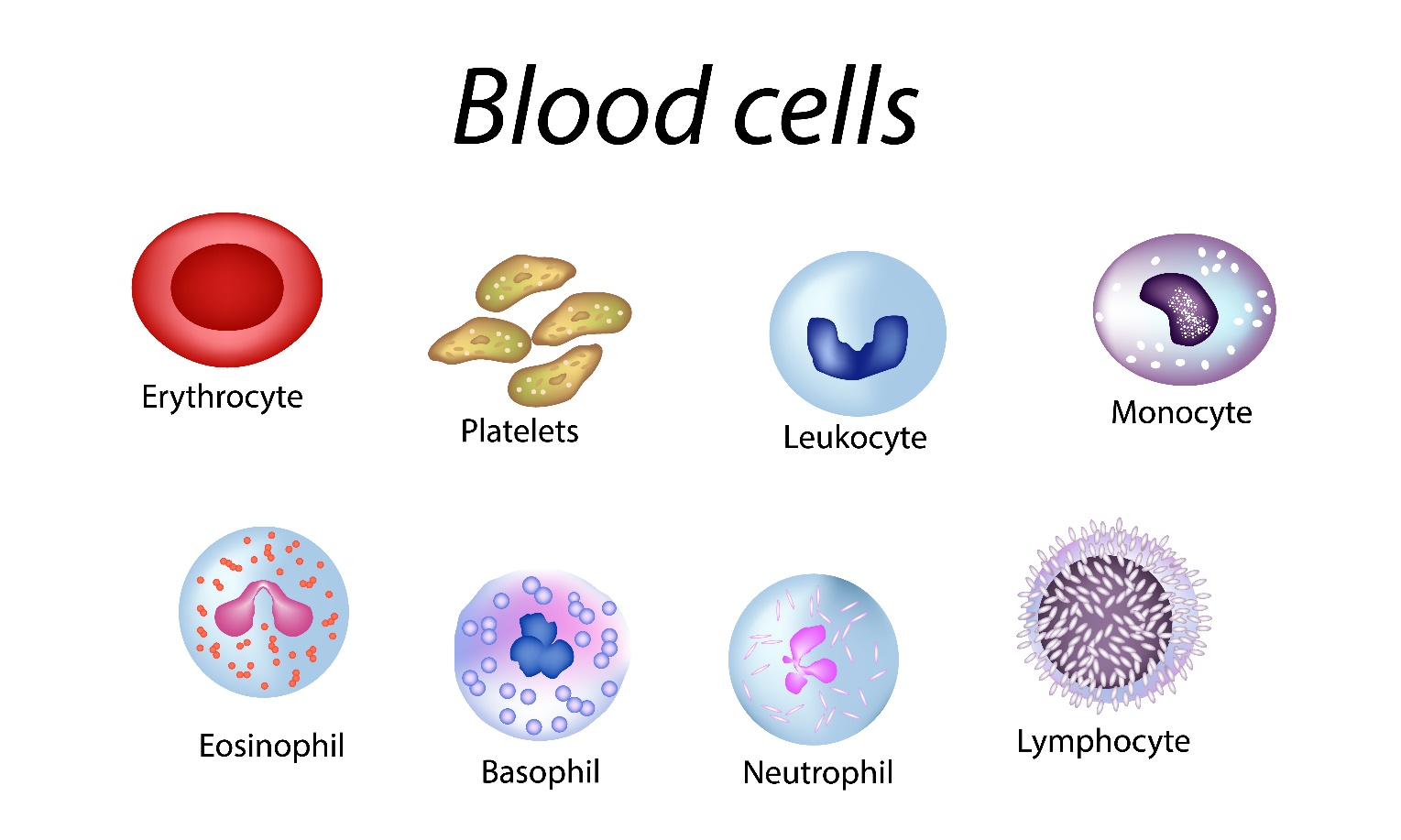
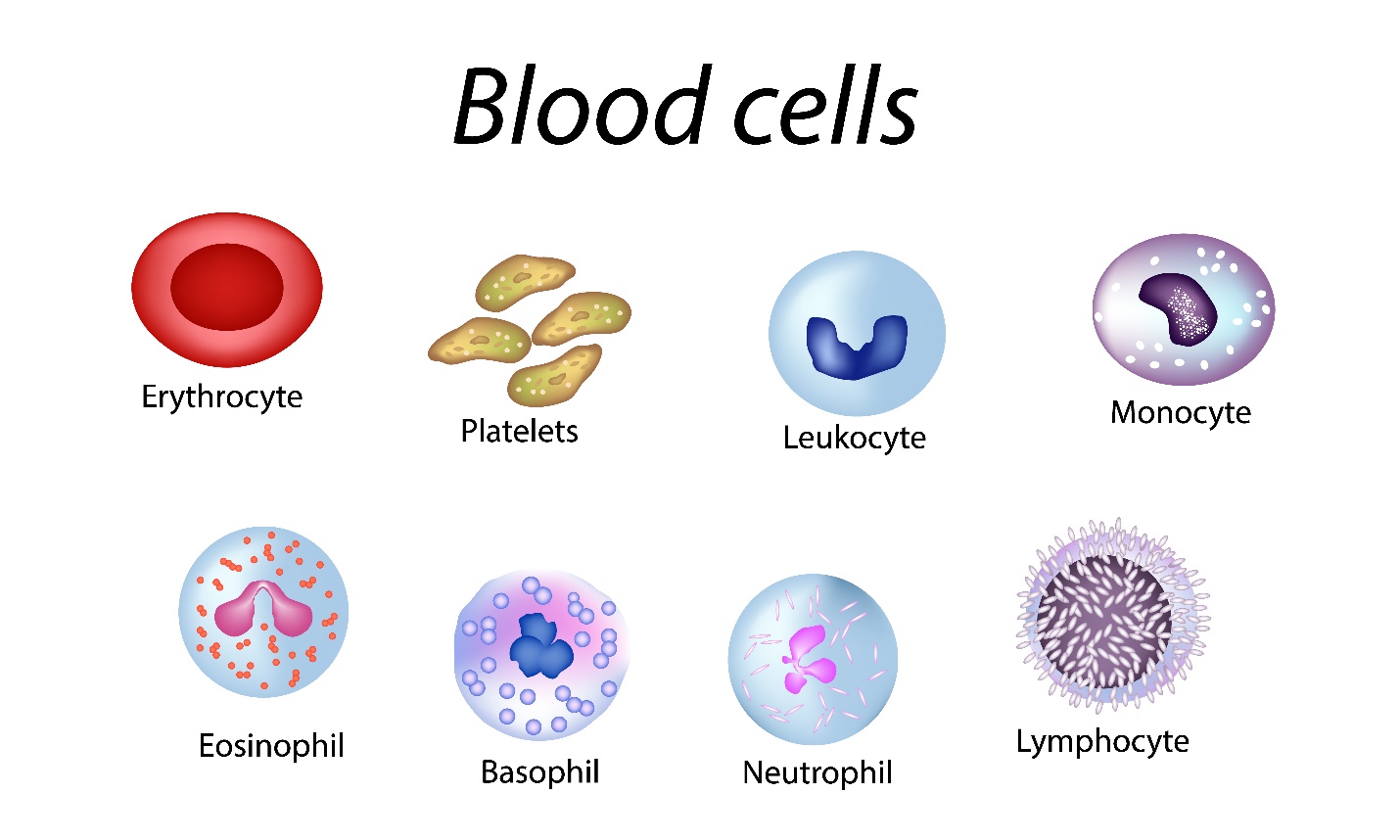
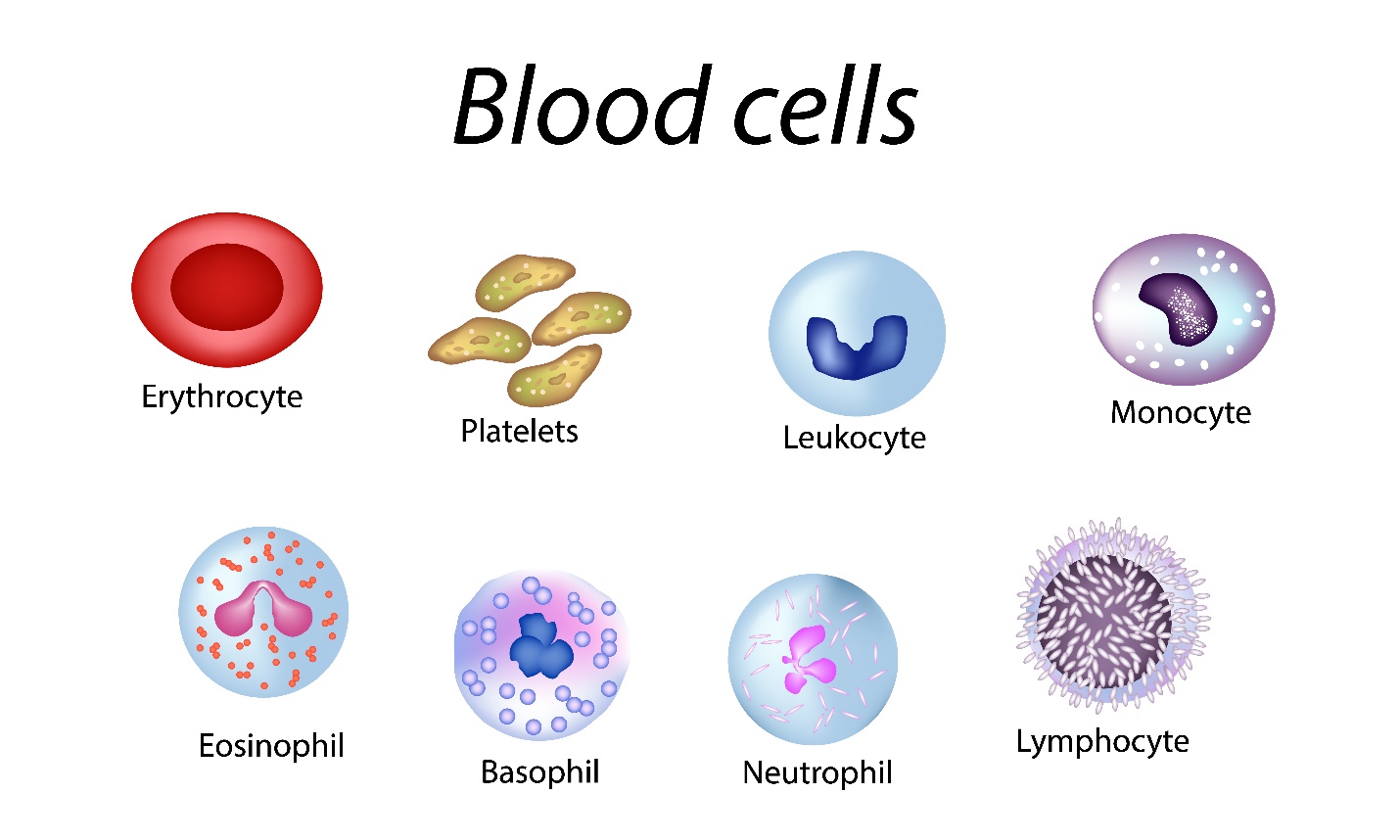


What is blood cytology?

* The study of the microscopic appearance of cells, especially for the diagnosis of abnormalities and malignancies

* Each cell type has unique characteristics
* Veterinarians are trained to know these special characteristics
* Abnormalities of cells may indicate a disease process
* Too few cells may indicate anemia
* Too many cells may indicate inflammation or malignancy

What cells are normally in blood?



What do these cells do?

* Erythrocytes (blood cells) carry oxygen to tissues
* Platelets are tiny cells that have a big job in stopping bleeding
* Monocytes fight infections and help other white blood cells remove dead or damaged tissues, destroy cancer cells, and regulate immunity against foreign substances
* Eosinophils are implicated in numerous inflammatory processes, especially allergic disorders
* Basophils contain anticoagulant heparin, which prevents blood from clotting too quickly. They also contain the vasodilator histamine, which promotes blood flow to tissues
* Neutrophils are the first cells to migrate to the site of infection to begin killing the invading microbes
* Lymphocytes eliminate pathogens by releasing antibodies, releasing cytotoxic granules or signaling to other cells of the immune system

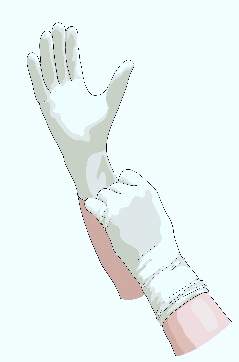
Blood cell abnormalities

* Spherocytes form when parts of the cell membrane are damaged (auto-immune disease)
* Target cells form due to an excess in cell membrane (liver disease)
* Acanthocytes have uneven thorny outer membranes caused by a defect in the lipid or protein composition of the membrane (liver disease and many others)
* Echinocytes look similar to acanthocytes but have uniform spikes covering the entire cell surface. They are usually an artifact due to chemical treatment of the slide
* Schistocytes are pieces of shredded red blood cells that signal active red blood cell destruction by the body (very bad!)

Other abnormalities

* Platelet clumps often occur in cats. Always check the feathered edge of the smear!
* Neutrophils with a sausage-looking nucleus are called “banded” and signal an active inflammatory process
* Neutrophils that look bubbly inside are called “toxic” and signal a blood infection
* Over-representation of any cell that is not a red blood cell or platelet signals a potential neoplasia, especially if they are in clusters
* White blood cells that vary drastically in size or have unusual nuclei signal a potential neoplasia
* Visual mitotic bodies are definitive of neoplasia

DiffQuik Stain Procedure



Put on gloves (or have blue/pink fingers)



Pick up slide with clothespin



Dip slide slowly 5 times in light blue fixative



Dip slide slowly 5 times in dark pink stain



Dip slide slowly 5 times in purple counter stain



Gently rinse slide with distilled water

Allow to air dry before viewing

The Compound Microscope

